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# Oak Leaf Roller and Springtime Defoliation of Live Oak Trees


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In early spring, many species of caterpillars can defoliate oaks and other trees. The caterpillars feed on the early spring growth and occasionally will eat all of the newly emerged leaves.

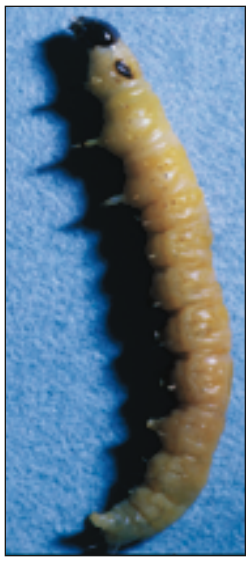

Fig. 1. Oak leaf roller larva.

Two such caterpillars are the oak leaf roller, *Archips semiferana* (Walker) (Lepidoptera: Tortricidae), and an associated species, *Sparganothis pettitana*. These insects occur throughout Texas but are most destructive in the Hill Country and South Texas. Damaging populations have been reported in Fredericksburg, Kerrville, Boerne, New Braunfels, San Antonio, Floresville and Goliad.

These species spin silken threads from which they hang when dislodged from leaves, branches or even from the trunk and nearby objects when disturbed. Other caterpillars that dangle from silk threads include the spring and fall cankerworms (often called "inchworms").

Walking through these dangling caterpillars can be a nuisance. By mid-April this problem may be so common that many Hill Country residents completely abandon patios and other outdoor activities because of the hundreds of dangling caterpillars.

To reduce the problems caused by these caterpillars, it is helpful to know how they damage trees and to understand their life cycle. In untreated areas, this information may not prevent encounters with dangling caterpillars. Knowing that these caterpillars are harmless to people and animals and that their occurrence is seasonal may provide some comfort. Also, wearing broad-rimmed hats and long-sleeved shirts while outdoors may also help prevent contact with these insects.

## Damage

When a tree is defoliated during the growing season, it becomes stressed and occasionally serious damage can occur. Green leaves manufacture energy (sugar that is later converted into other carbohydrates) that allows the tree to grow and maintain its natural vigor.

Once a tree is defoliated, it essentially stops manufacturing sugar, which slows tree growth. Although deciduous trees (broad-leaved trees that generally lose their leaves each winter) can produce new leaves and stay alive for short periods, this process uses up their reserve food supply.

Fig. 2. Cankerworm or inchworm.

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More importantly, these stressed trees are more susceptible to attack by various diseases and insects. Weakened trees are extremely susceptible to wood-boring insects such as longhorn beetles, flat-headed tree borers, shot-hole borers and many clear-winged tree borers. (For more information on these insects, see the Texas Cooperative Extension publication B-5086, *Wood-Boring Insects of Trees and Shrubs*.)

If the trees are completely defoliated year after year, especially under the drought conditions that are common across Texas, they will die.

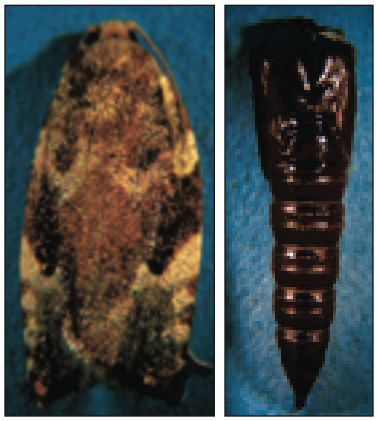


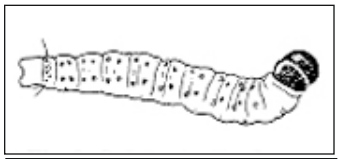
Fig. 3. Oak leafroller moth (left) and pupal skin (right).

## Life cycle

The adult moth of the oak leaf roller, *Archips semiferana*, is about 1/2 inch long. Its wings are mottled brown with dark brown markings. *Spargan-othis pettitana* (no common name) has lemon yellow wings and ranges from 1/2 to 3/4 inch long.

Both species undergo one generation each year. In May, moths of both species lay their eggs on the twig tips and leaf buds of several different tree species. The eggs remain on the buds or twigs for about 10 months and begin to hatch in mid-March.

Once they hatch, the caterpillars, or larvae, feed on the tender new spring growth of the trees from mid-March until late April. The larvae are creamy white to greenish and have dark black or brown head capsules. They develop through several stages, or instars, as they mature to about 3/4 inch long.



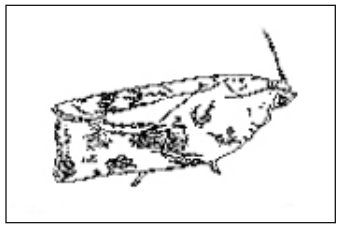


Fig. 4. Oak leaf roller moth larva (above) and adult (below.)

Trees that are heavily infested will usually be defoliated by mid- to late April, when the fully grown caterpillars form the pupa stage on the tips of twigs, in bark crevices or on weeds and other plants growing near the infested trees.

Fig. 5. Oak leaf roller, *Archips semiferana* (Walker) (Lepidoptera: Tortricidae) adult (left), pupal skin (center) and caterpillar (right), collected from oak trees, March 2002.

At about the first of May, moths begin to emerge from the pupal stage (cocoon) and begin laying eggs on the twigs of oak, hackberry, pecan and walnut trees. These eggs will again remain dormant until the following March, thus completing the 1-year life cycle.

## Management

For most oak trees throughout the Hill Country, it is not feasible to use insecticides to control the oak leaf roller and its related species. Often the best course of action is to simply do nothing. Post oak trees have survived in South and Central Texas without human intervention through time, despite periodic pest outbreaks and resulting defoliation. Caterpillar pest populations are generally cyclic, and they rarely occur year after year.

The oak leaf roller does have a few natural enemies. The best natural control appears to be provided by several types of parasitic wasps that attack and kill the oak leaf rollers. However, there are seldom enough of these wasps to curtail an outbreak. Certain birds, including mockingbirds, have also been observed feeding on the dangling caterpillars.

Fig. 6. Close-up of oak web worm caterpillar.

In residential situations, however, valuable landscape or orchard trees may need to be protected from caterpillar outbreaks. Valuable landscape trees with a history of leaf roller infestation and defoliation should be watched closely from mid- to late March. If heavy leaf-feeding damage is observed, the tree leaves can be sprayed with a registered insecticide containing either carbaryl (such as Sevin®), the insecticide that contains *Bacillus thuringiensis* var. *kurstaki*, or any of several other products labeled for control of "caterpillars" or "oakworms" on ornamental trees and shrubs.

To minimize stress and to restore plant vigor, oaks or other trees that have been severely defoliated in the past should be fertilized and watered regularly. Choose a balanced fertilizer (one that has equal amounts of the three major elements nitrogen, phosphorus and potassium) and apply it at the rate of 1 pound of nitrogen (N) per diameter inch of the trunk at waist height.

Apply the fertilizer in a circular pattern within the tree's drip line, which is the area under a tree from the trunk to the outermost limb. For best recovery of the trees, apply ammonium sulfate (21-0-0) at the same rate 6 to 8 weeks later.

## Acknowledgments

This fact sheet was originally developed by J. W. Stewart, Extension entomologist, and Bob Bailey, county Extension agent for Kendall County, as part of the Upper Coast series, No. 21. Their publication, *Defoliation of Live Oak Trees by the Oak Leaf Roller and a Closely Related Moth*, was published in April 1993.

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